STATE OF TEXAS)
)
COUNTY OF COLLIN)

AFFIDAVIT OF KEITH RAINER

1. My name is Keith Rainer. I am currently Director of Wireless Systems of Southwestern Bell Mobile Systems, Inc. ("SBMS"), which is headquartered in Dallas, Texas. In my position at SBMS I am responsible for the design, construction, maintenance and operation of networks over which SBMS will offer Personal Communications Services.

2. I have a bachelor degree in electrical engineering, which I received with honors from Auburn University. I also have a master of science degree in electrical engineering, which I received from the Georgia Institute of Technology ("Georgia Tech"). I have completed extensive graduate studies beyond my master's degree.

3. Following the completion of my bachelor's degree program in 1980 I began employment with Bell Telephone Laboratories ("Bell Labs"). While at Bell Labs I worked on the development of digital switches, circuit analysis programs, systems reliability analysis programs, coding from memory management and advanced signaling protocols. In 1983 I left Bell Labs and began employment with Georgia Tech as a member of the research facility, where I achieved the position of Senior Research Engineer. While at Georgia Tech I performed extensive research in the areas of applied electromagnetics and communications systems, taught continuing education courses on selected topics in electromagnetics and was accepted into the electrical engineering doctoral program.

4. In 1990 I became a member of the technical staff at Southwestern Bell Technology Resources, Inc. ("TRI"), where I was employed until 1994, when I became an employee of SBMS. At TRI I was involved in numerous projects relating to radio-based communications systems and products. My specific areas of interest and responsibility included microcellular systems, outdoor and indoor wireless data systems, mobile location technology antennas, electromagnetic propagation modeling and measurements and radio communication protocols.

I. PCS ARCHITECTURE

5. SBMS was the high bidder for and has been awarded licenses to provide PCS services in the Tulsa, Oklahoma, Little Rock, Arkansas and Memphis, Tennessee Major Trading Areas ("MTAs"). Copies of the MTA maps are attached as Exhibits 1.A, 1.B and 1.C. I am currently involved in the design of the networks which will be utilized by SBMS to provide PCS services in these MTAs.

6. PCS, as contemplated by the FCC, is nothing more than cellular services offered on a different frequency. The PCS network will consist of a series of cell sites, many of which may be low powered cell sites, and a Mobile Telephone Switching Office ("MTSO"). Each cell site will re-use frequencies utilized by the PCS operator in other parts of the PCS system, will allow for handoff from cell site to cell site and will require the same type of switching fabric utilized by cellular operators today. This network architecture is virtually identical to the network architecture of cellular systems, including cell sites and switching offices.

7. At a recent forum sponsored by the Cellular Telecommunications Industry Association ("CTIA") held on October 28-29, 1993 in Dallas, Texas, presentations were given to wireless industry participants by every major wireless manufacturer in the world regarding the proposed PCS

equipment. Attached as Exhibit 2 is a list of attendees. Each of the manufacturers represented agreed that PCS is cellular at a different frequency; PCS simply makes additional radio spectrum available for the offering of wireless mobile services. The technical standards used for PCS should be the same ones already existing for cellular. changed only to accommodate up-banding from 800 MHz to 1900 MHz. In particular, the vendors stressed the need for seamless service offerings by PCS providers, discussed the possibility of dual mode (800 MHz-2GHz) switches and mobiles, as well as the need for common air interface standards. See submissions by Hughes, Ericsson, Northern Telecom, Motorola and Alcatel attached as Exhibits 3 - 7. This includes the IS-41 standard which permits intersystem handoff.

8. AT&T has developed a Number 5 ESS switch to be used in the wireless market. This switch is designed to be a platform upon which both a PCS and cellular system can be built. In addition, AT&T currently has cell sites (called Series II cell site equipment) which can be utilized as a platform for analog cellular, digital cellular and digital PCS. PCS networks will be stand-alone networks, with the same or similar interconnection to the separate landline network. As a result, the services offered by PCS operators, including SBMS, will be the same or similar to the cellular service and will utilize the same or similar wireless switching and cell site network equipment and architecture.

II. CONCERNS WITH INTERLATA HANDOFF IN PCS NETWORKS

9. As with cellular, PCS service within a territory served by a given MTSO should be "seamless." This means that calls are handed off from one cell site to the next as the mobile customer moves within the service territory. The issue of continuing a call in progress from one cellular system to another (this is referred to as "handoff") is an equally complex engineering process for PCS as for

cellular. The complexity of this challenge with PCS is enhanced, however, by the shear size of the geographic areas licensed by the FCC. As shown on Exhibit 1, a PCS MTA is much larger than most Metropolitan Service Areas ("MSAs") or Rural Service Areas ("RSAs"), which are the geographic boundaries utilized by the FCC to license cellular service. In light of the size of the PCS license areas, handoffs will occur on an interLATA basis within the licensed area itself for PCS far more frequently than in an MSA or RSA. Exhibits 1.A - 1.C are maps of the Tulsa, Oklahoma, Little Rock, Arkansas and Memphis, Tennessee MTAs with LATA boundaries displayed on them. As a result of the large licensed area at issue, SBMS would, absent a waiver of the interexchange restrictions for handoff, find it necessary to discontinue calls in progress at LATA boundaries within the MTA licensed area due to the technical inability to have an equal access handoff. For example, the Little Rock, Arkansas MTA includes all or part of the Little Rock, Fort Smith and Fayetteville Arkansas MSAs and every single RSA in Arkansas. This MTA covers three LATAs just within Arkansas. The Memphis MTA includes the Memphis, Tennessee and Jackson, Mississippi MSAs and portions of RSAs in Tennessee, Arkansas, Kentucky, Mississippi, Louisiana and Alabama. To offer a seamless PCS service in Memphis, SBMS must cross LATA boundaries at the Arkansas-Tennessee state line (which bisects the Memphis MSA), and the state lines between Tennessee and both Kentucky and Mississippi, and between Mississippi and both Louisiana and Alabama. Both RBOCs and non-RBOC affiliated cellular carriers, who are SBMS' competitors, may continue calls across these boundaries.

10. The cellular industry (including carriers and manufacturers) spent a number of years developing standards for the interoperability of cellular switches to facilitate handoffs. This process was accurately described by John A. Marhino, Chairman of the TR 45.2 Subcommittee of the

Telecommunications Industry Association which developed the IS-41 Standard in an affidavit submitted in support of an original cellular handoff waiver as follows:

"Intersystem Handoff

13. Believing that it would be desirable to customers, the TR 45.2 Subcommittee undertook to standardize a process which would enable calls to remain connected when customers roamed from the coverage area of one system to that of another system. For this to happen with respect to any particular call, the call must be handed-off from the MTSO initially handling the call to the MTSO serving the area into which the customer has roamed. This process is extremely difficult to engineer. Handoffs are initiated and coordinated by gauging the strength of the signal from the mobile telephone to nearby cell sites. When the MTSO serving a particular customer detects that the signal from that customer is deteriorating, it asks the cells adjacent to the serving cell to measure the signal strength of the mobile unit. If one or more of these adjacent cells is in a different MTSO, then the neighboring MTSO will also be asked to measure the strength of the signal. The neighboring MTSO will instruct its adjacent cell site(s) to tune to the channel carrying the call and take measurements of signal strength. The neighboring MTSO will then communicate those measurements back to the home MTSO.

14. Based on these measurements, the home MTSO determines which cell can best serve the customer. If the home MTSO determines that the call can best be handled by a cell site in a neighboring system (i.e., that the call should be handed-off), it asks the neighboring MTSO to assign a specific channel for the call and then--before the quality of the call deteriorates--the home MTSO instructs the mobile telephone to switch to the channel to which the neighboring system is now tuned. Simultaneously, the home MTSO identifies a landline trunk over which the call can be extended to the neighboring MTSO, the neighboring MTSO confirms the choice of trunk, and the call is rerouted through the neighboring MTSO to the cell site serving the customer. The call can then continue on the new channel through the cell sites of the neighboring MTSO.

15. Effective call handoff must take place quickly. When a car driving down an expressway moves from one system to another, the first system will typically have only a few seconds to handoff control to the second system; any greater delay will result in unnecessary deterioration of the signal and potentially in the call being dropped. Furthermore, the strength of the signal is affected by many factors, not just proximity.

16. Because of the speed requirements of intersystem handoff, it is not technically practical at this time to handoff calls between MTSOs using switched landline

facilities. Only direct connections (dedicated trunks) between MTSOs, with no other intervening switches, are currently envisioned for this process. Indirect connections through the landline network are not. Routing the call via the customer's Presubscribed Interexchange Carrier (PIC) could take several seconds or more. In that time the signal may deteriorate so much as to cause the call to disconnect. Even if the call does not disconnect, the quality of service is likely to be poorer.

17. Setting to one side considerations of speed, routing the call through the public switched telephone network would make no sense from a purely engineering point of view. Intersystem handoff is already tremendously complex. It requires exact timing and a high degree of coordination between MTSO switches. Today, this is most effectively and efficiently accomplished using dedicated trunks.

18. Accordingly, IS-41 assumes the use of dedicated trunks between MTSOs to effectuate call handoff. IS-41 was not designed for transfer of a call through the public switched network. Although it would be technically possible to transfer calls over the customer's PIC if each interexchange carrier provided dedicated trunks between each MTSO, the potential number of trunk groups and splintering of traffic would result in a very inefficient network design. Consequently, IS-41 was not designed for use of the customer's PIC in transferring the call from one MTSO to the other."

The entire affidavit is attached as 8.

11. This exact same process with all of the attenuating engineering difficulties applies to PCS intersystem handoff as well Furthermore, this handoff problem is compounded if you want to offer seamless PCS service. For example, as a PCS customer is traveling through the Arkansas MTA and reaches a LATA boundary within that MTA, it is economically and technically impractical, if not impossible in today's environment to take a call in progress and deliver it to an interexchange carrier chosen by that customer to carry that call to the next PCS cell site operated by SBMS on the opposite side of the LATA boundary and continue that portion of the call on an equal access basis. Even if SBMS had a MTSO located in the adjacent LATA (but still contained within the Arkansas MTA), SBMS would not be able to arrange for a handoff from one SBMS-operated PCS switch to another

across a LATA boundary using the customer's PIC, for the exact same reasons as described by Mr. Marhino in his affidavit set out above.

12. The complexity of the intersystem handoffs for PCS providers is further complicated by the fact that PCS providers are considering multiple technologies by which they could provide service. For example, a number of vendors are contemplating using an existing Code Division Multiple Access ("CDMA") digital standard up-banded to the 2 GHz range. Other PCS providers are considering Time Division Multiple Access ("TDMA") digital technology up-banded to the 2 GHz range. Yet additional PCS providers are considering the GSM digital standard utilized in Europe. At the boundaries of licensed service areas, it is quite possible that we will find a GSM system operated adjacent to a TDMA system operated adjacent to a CDMA system, all of which may wish to attempt to establish intersystem handoff with each other. The complexity of tying those disparate technologies together on an intersystem operation is enormous. To compound the complexity of this problem by attempting to do so on an equal access basis, is not technically possible in today's environment.

13. Finally, some PCS providers are contemplating entering into reseller arrangements with existing cellular providers. Those PCS providers would provide to their customers dual mode phones which operate on a cellular frequency (most likely on an analog basis) and could also operate on a digital basis in the PCS spectrum. Absent the handoff waiver for PCS in support of which this Affidavit has been prepared, a PCS provider would find that its customers would be reluctant to utilize PCS spectrum, which could not offer the same intersystem handoff and continuous call capabilities as the cellular capabilities which could be obtained on that same device. This inability of the PCS operator to provide the same coverage and intersystem operating capabilities as its cellular

competitors in a market would prove to be a significant disincintive not only to the use of its spectrum by the provider's customers, but to the build-out of that PCS network. This disincentive would be a factor in delaying the availability of a PCS network on a ubiquitous basis, which would delay the availability of the competitive benefits of PCS to the consuming public.

WITNESS my hand this 9 day of October, 1995.

Keith Rainer

Subscribed and sworn to before me this 9 day of October, 1995.

Kristy Horton
Notary Public

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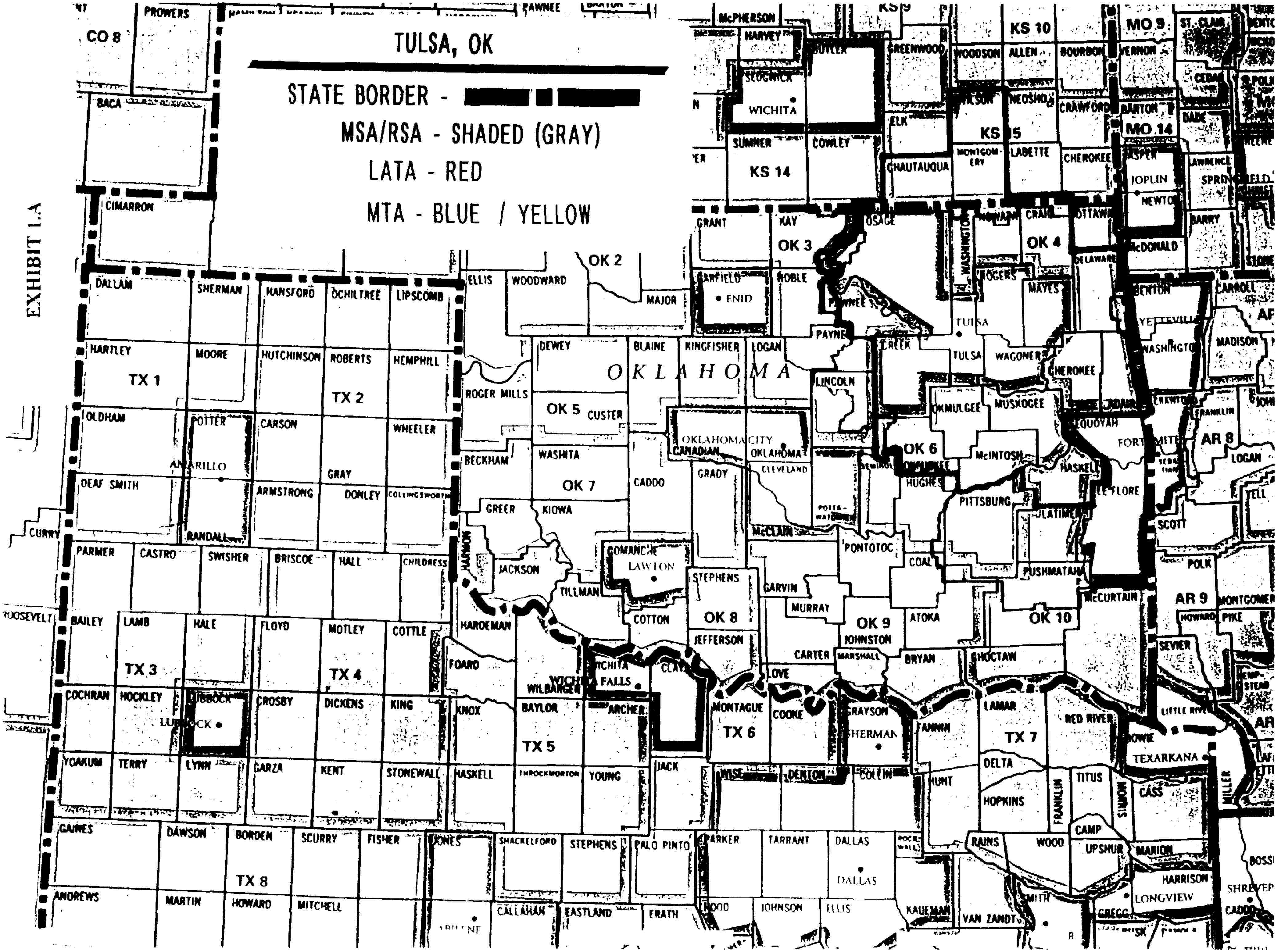
KRISTY HORTON
Notary Public
State of Texas
Commission Expires 10-18-98

EXHIBIT I.A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AMARILLO
LAWTON
OKLAHOMA CITY
LUBBOCK
WICHITA FALLS
SHERMAN
TEXARKANA
DALLAS
LONGVIEW
PROWERS
BACA
CIMARRON
DALLAM
SHERMAN
HANSFORD
OCHILTREE
LIPSCOMB
HARTLEY
MOORE
HUTCHINSON
ROBERTS
HEMPHILL
OLDHAM
POTTER
CARSON
WHEELER
GRAY
DEAF SMITH
ARMSTRONG
DONLEY
COLLINGSWORTH
RANDALL
CURRY
PARMER
CASTRO
SWISHER
BRISCOE
HALL
CHILDRESS
ROOSEVELT
BAILEY
LAMB
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COCHRAN
HOCKLEY
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TERRY
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ANDREWS
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HOWARD
MITCHELL
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MAJOR
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ROGER MILLS
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CLEVELAND
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WAGONER
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McINTOSH
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McCLAIN
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ATOKA
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CHOCTAW
McCURTAIN
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ADAIR
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FRANKLIN
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BARTON
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McDONALD
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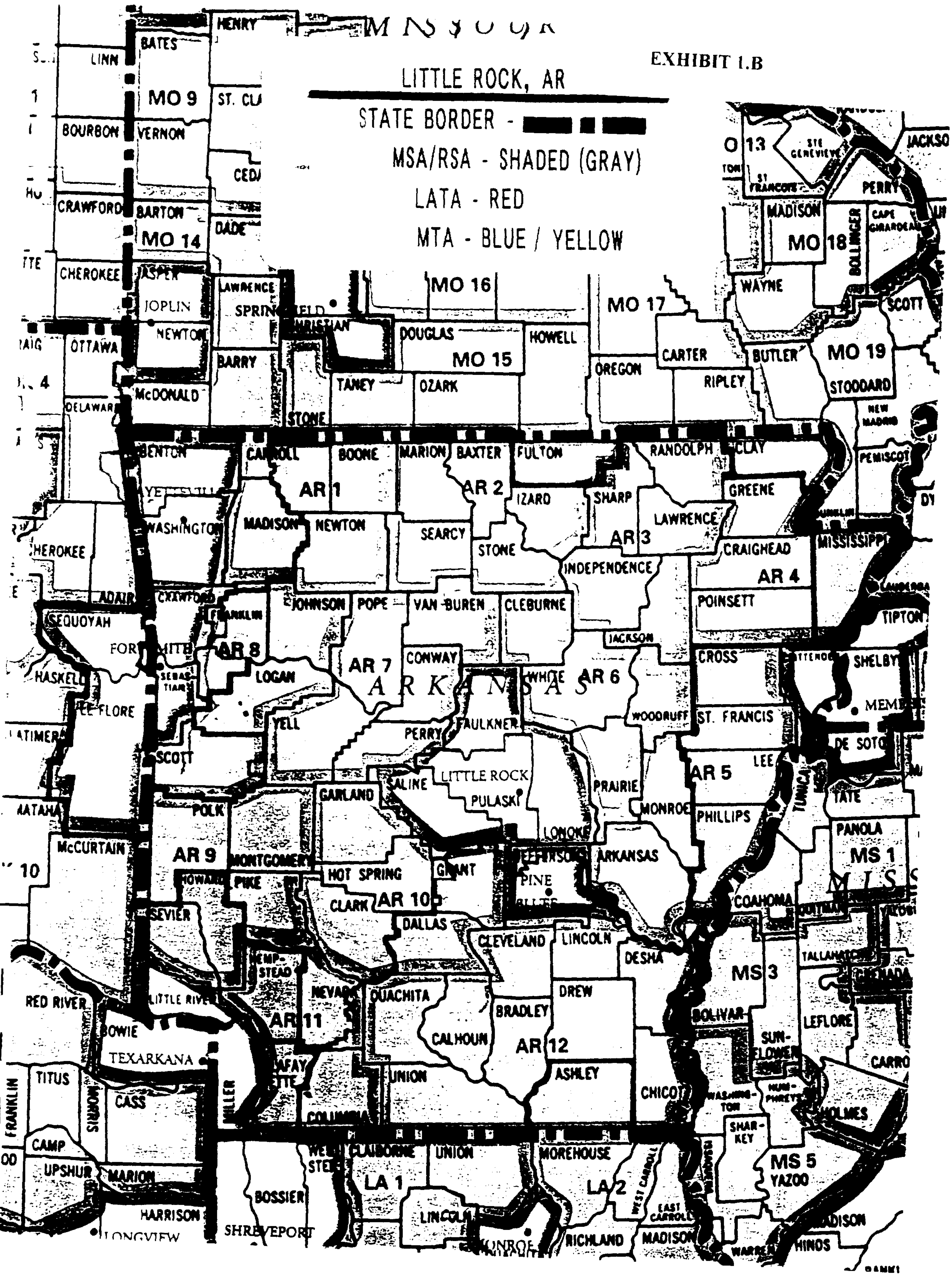
LAWRENCE
SHREVEPORT
CADDO

EXHIBIT 1.B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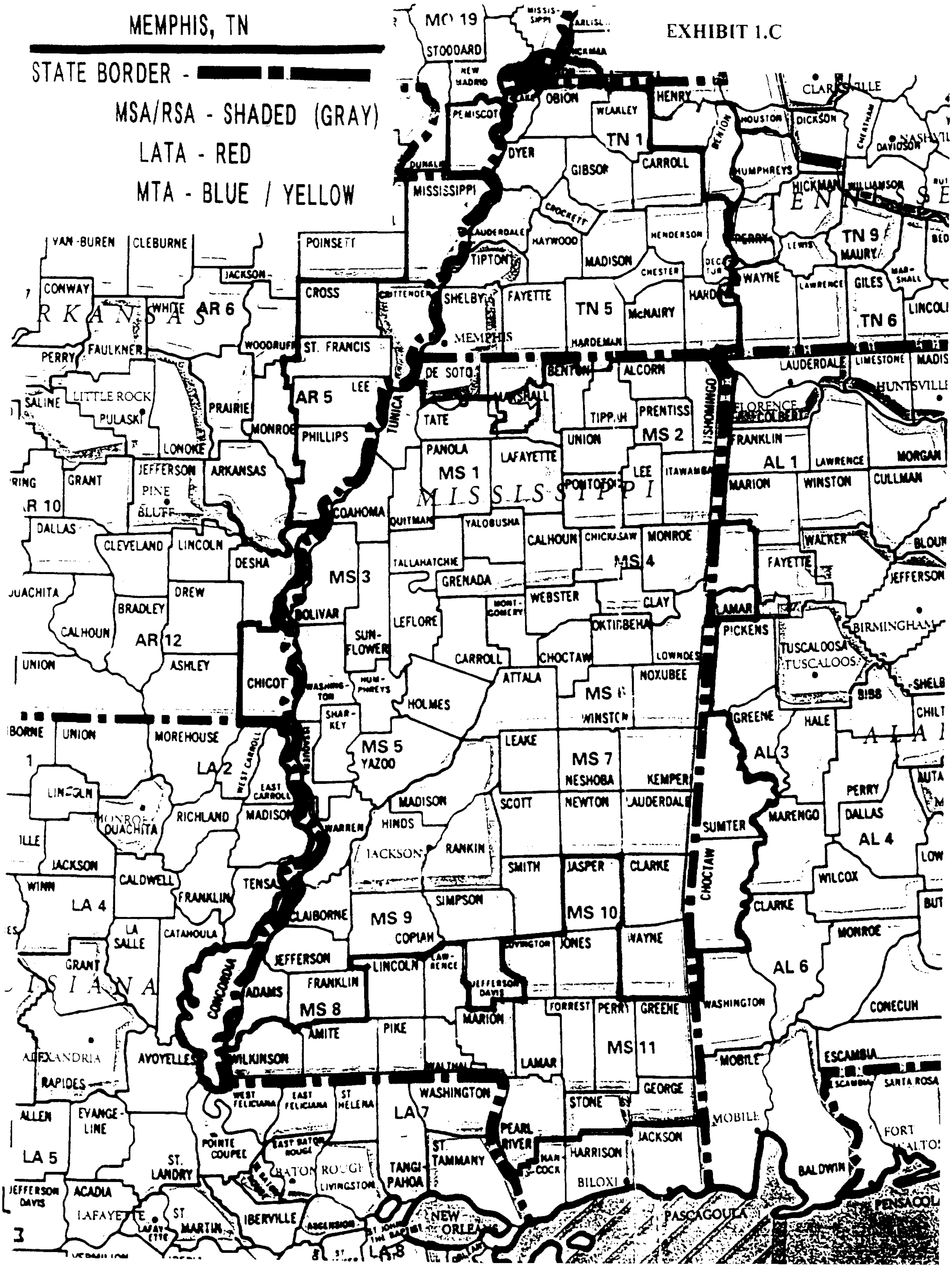
HINDS
MADISON
LONGVIEW

EXHIBIT 1.C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PINE BLUFF
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HUNTSVILLE
TUSCALOOSA
NASHVILLE
CLARKSVILLE
FLORENCE
BILOXI
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SMITH
JASPER
CLARKE
CLAIBORNE
SIMPSON
COPIAH
JEFFERSON
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COVINGTON
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JEFFERSON DAVIS
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OUACHITA
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GRANT
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ST HELENA
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TANGIPAHOA
LIVINGSTON
POINTE COUPEE
EAST BATON ROUGE
IBERVILLE
ST. MARTIN
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ACADIA
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COLBERT
LIMESTONE
WALKER
FAYETTE
LAMAR
PICKENS
JEFFERSON
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DAVIDSON
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BENTON
VAN BUREN
CLEBURNE
CONWAY
WHITE
JACKSON
WOODRUFF
FAULKNER
PERRY
SALINE
PULASKI
PRAIRIE
MONROE
LONOKE
JEFFERSON
ARKANSAS
GRANT
DALLAS
CLEVELAND
LINCOLN
BRADLEY
CALHOUN
UNION

EXHIBIT 2

C T I A

Cellular
Telecommunications
Industry Association
1133 21st Street, NW
Third Floor
Washington, DC 20036
202-785-0081 Telephone
202-785-0721 Fax

Building The
Wireless Future.

THE INTEGRATION OF NEW SPECTRUM INTO THE WIRELESS WORLD

October 28 - 29, 1993
Doubletree Hotel at Park West
Dallas, Texas

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AUG 1 7 1995
LEGAL DEPT.

AGENDA

Thursday, October 28

9:00 - 9:15	Opening Remarks
9:15 - 10:15	Nokia
10:30 - 12:00	Hughes
12:00 - 1:30	Lunch in the Hunter's Lounge
1:30 - 3:00	Qualcomm
3:00 - 4:30	Northern Telecom
4:45 - 6:15	ALCATEL

Friday, October 29

8:00 - 9:00	AT&T
9:00 - 10:30	Ericsson
10:45 - 12:15	Motorola

EXHIBIT 3

HUGHES
NETWORK SYSTEMS
Subsidiary of
Hughes Aircraft Company

THE INTEGRATION OF NEW SPECTRUM INTO THE WIRELESS WORLD

HUGHES NETWORK SYSTEMS PERSPECTIVE

Presented by

RAJU PATEL
VICE PRESIDENT & GM, WIRELESS DIVISION
HUGHES NETWORK SYSTEMS, INC.
GERMANTOWN, MD 20876, USA
(301)-428-5545

October 28-29, 1993

INTEGRATING NEW SPECTRUM WITH PCS OBJECTIVE

- PCS/PCN IS A "SERVICES" EVOLUTION; NOT JUST A "TECHNOLOGY/ SYSTEMS" EVOLUTION.
- SUCCESS IN PCS REQUIRES THE ABILITY TO CREATE A "SEAMLESS" COEXISTENCE OF MULTIPLE DELIVERY (WIRED AND WIRELESS) NETWORKS.
- PCS IS INDEPENDENT OF AIR-INTERFACE (TDMA, CDMA, PRMA, ETC.) AND OTHER RADIO TECHNOLOGY ISSUES.
- DISTRIBUTED INTELLIGENCE: MEANS NOT ONLY "INTELLIGENT NETWORK", BUT ALSO "INTELLIGENT TERMINALS".

EXHIBIT 4

CTIA FORUM

"Integration of New Spectrum Into
the Wireless World"

October 28-29, 1993

Dallas, TX

Submitted to: CTIA
1133 21st N.W.
Washington, DC 20036

Submitted by: Ericsson
740 E. Campbell Road
Richardson, TX 75081

that are implemented with large cells for coverage and an underlay of microcells for capacity and indoor coverage. The use of a hierarchial structure is common with TDMA. Different cell sizes or layered cell structures are less practical with CDMA.

3. <u>What are the steps to an orderly and logical development of this new spectrum?</u>

The industry should minimize the deployment of multiple and incompatible air access technologies. Supporting multiple air interface fragments the market, forces small production runs and significantly increases complexity (as a result of requests for multi-mode terminals).

The infrastructure in the network that supports the air interface is actually more critical than the air interface itself. The network must support customer-visible features on introduction to ensure success in the market. Hence, the inclusion of a multiple-rate coder is a key element in establishing standards. High voice quality should also be an important focus area in the examination of technological alternatives and standards.

Therefore the key to an orderly and logical development of the new spectrum is to establish standards for the air interface and system inter-networking.

4. **<u>If asked to develop infrastructure that supports both existing cellular and your candidate technology at 1.8 GHz, how would you comply with this request? (i.e., upgrade, overlay, replacement, etc.)</u>**

The development of an infrastructure that supports existing cellular and 1.8 GHz is heavily dependent on the choice of the air access protocol. Using the same air interface specification at both frequencies minimizes the impact on the existing infrastructures.

- Either an upgrade or overlay is possible, depending on the air interface chosen.

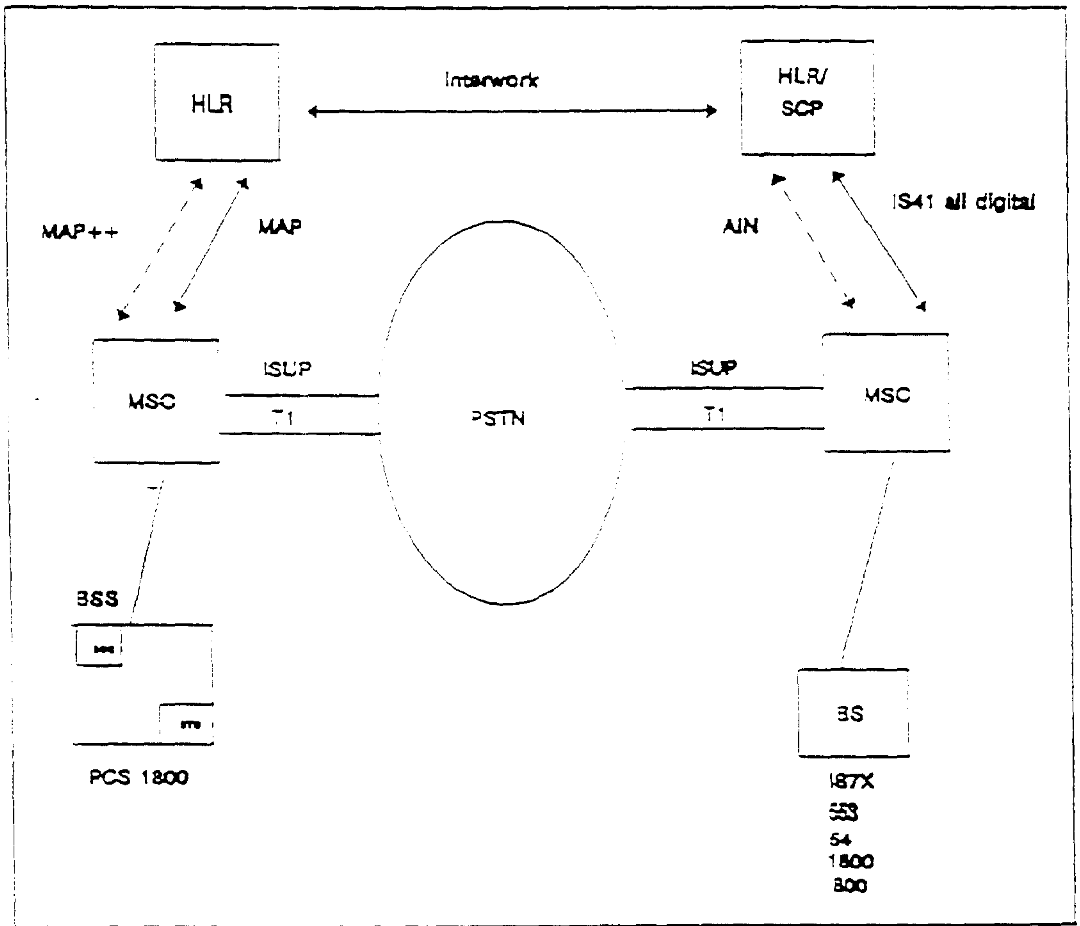
- If D-AMPS is used at 1.8 GHz, the only required change will be the addition of new base station equipment to the existing cellular base station with updated antenna system, and minor software changes in the MSC. When a digital control channel and ISDN call model are introduced in the D-AMPS standard, the system infrastructure is unchanged.

- If DCS 1800 is used as the air interface at 1.8 GHz, an overlaid radio network is required. This air interface will also require infrastructure support at the network level, because the networking protocol requires specific support of the air interface.

Networking issues will be important to operators of systems at the new frequencies.

If different operators choose the same air interface (e.g. either D-AMPS or DCS 1800), they will be completely transparent with each other's networks. The protocols that allow roaming, feature mobility, and handoff will align precisely, just as those systems using IS 41 do today. If operators choose a different air interface, (for reasons of desired feature functionality, market differentiation etc.), then the networking issues will be more complex. The interworking could be implemented on the level of the HLR/SCP or via protocol converters. However, the level of transparency between the networks would be limited. At a minimum, roaming, call delivery and some feature profile transfer would be possible, but considerable development would be required.

The diagram below shows a **logical** reference model for a scenario in which operators have chosen two different air interfaces, e.g., D-AMPS 1800 and DCS 1800.



northern telecom

EXHIBIT 5

PCS

Integration of New Spectrum into the Wireless World

The Northern Telecom Outlook

On September 29, 1993, less than one week after the allocation of significant new PCS frequencies by the FCC, Northern Telecom announced and demonstrated a product line designed to operate in the new 1.8 GHz PCS spectrum. Utilizing the latest digital technology, Northern Telecom's portfolio of public and private wireless products will provide the platform for advanced, consumer-oriented PCS services to complement today's existing mobile services.

Northern Telecom is providing network solutions to a variety of 1.8 GHz PCS applications:

> **PCS 1900** --> A high-power, wide-area wireless network supporting vehicular hand-off and advanced data, business, and mobility features. Microcell technology will provide an option for low-tier pedestrian and in-building coverage in the future.
>
> **Companion Mobility Networks** --> A distributed public PCS network architecture supporting a variety of base station subsystems. In a low-power configuration, the network supports near-wireline voice quality and pedestrian hand-off to networks offering "zones of mobility".
>
> **Companion In-Building Systems** --> Private wireless solutions providing building and campus-wide mobility in a wide variety of business applications.

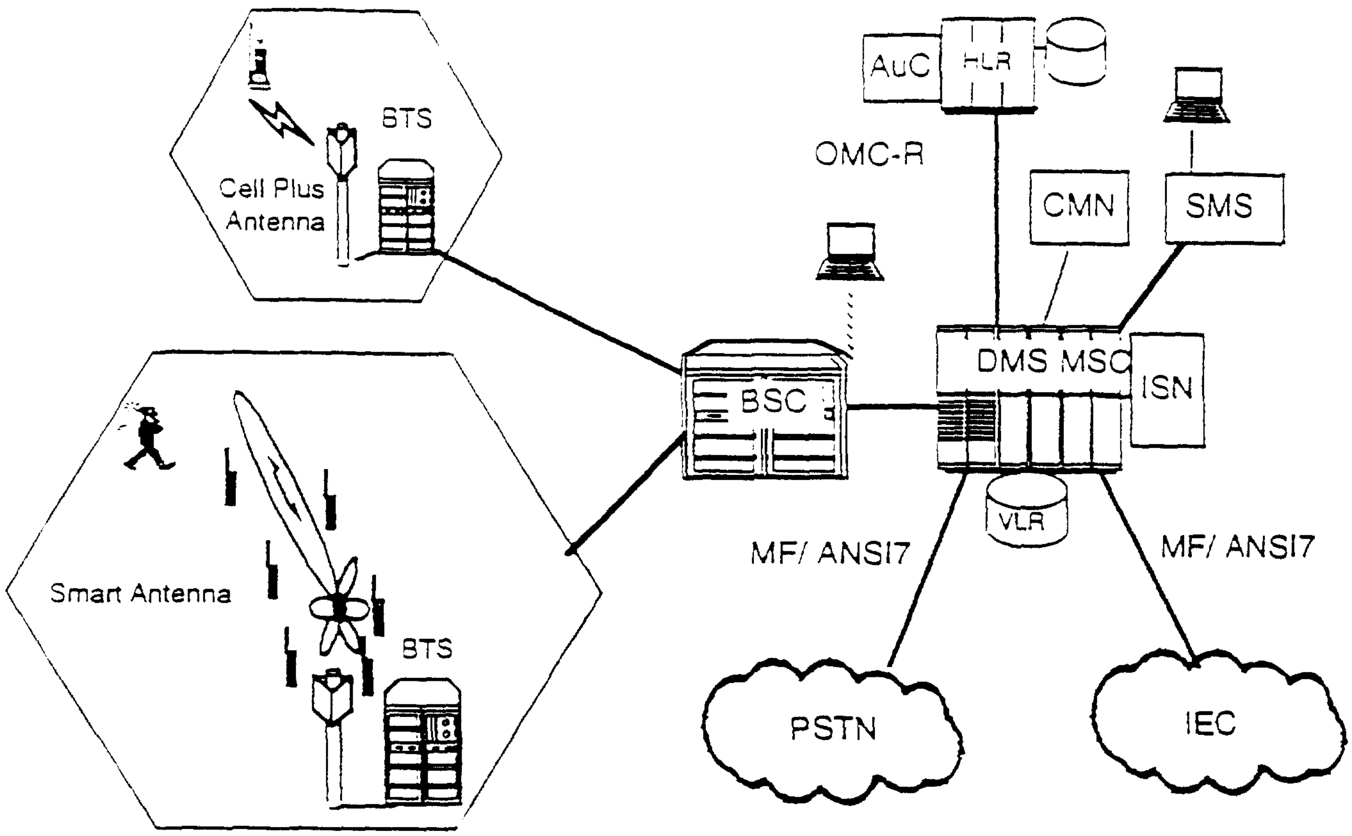
Northern Telecom's experience in supplying equipment and services for the cellular industry and our association with the CTIA membership has sharpened our commitment to providing a complete portfolio of wireless products. We look forward to working with cellular service providers to help them benefit from the opportunities afforded by the new spectrum.

For more information about the products described here, please contact:

Nancy White
Vice President, PCS Marketing
Northern Telecom Wireless
2221 Lakeside Boulevard
Richardson, TX, 75082
Telephone: 1-214-684-8467

Tim Turner

PCS 1900 for Wide-Area Coverage



- Digital Radio operating in 2 GHz band
- Open Standard interfaces between all components
- Turnkey Network Solution available in 1994
- Services & Technical Differentiation
- Platform for RF Access and Network Services Evolution

We've all read about a myriad of approaches to deploying the new spectrum. TDD vs. FDD, TDMA vs. CDMA, wideband vs. narrowband, etc. In light of the FCC's latest actions, identify what you believe to be the top two or three approaches.

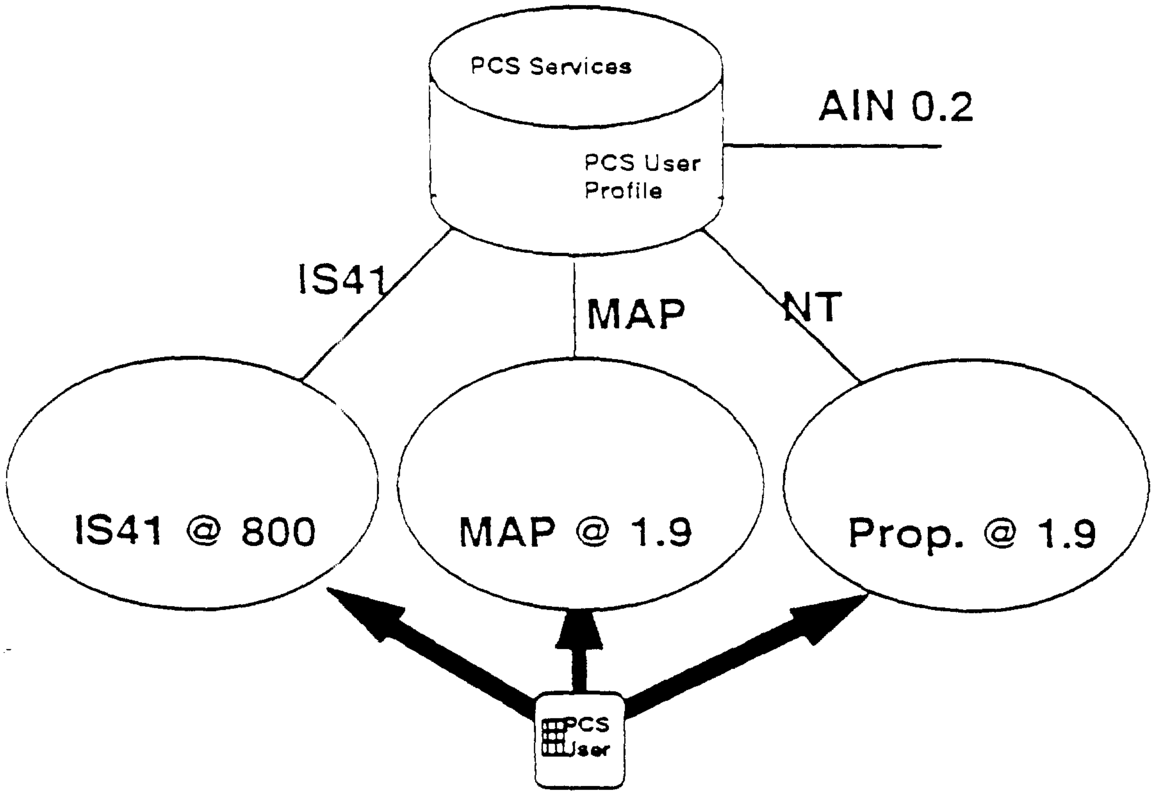
All of the approaches mentioned have technical merit and may have superiority over other technologies in addressing specific applications.

NT is currently delivering TDMA/FDD systems both for the 800 MHz and 1.8 GHz markets. NT is also developing FDMA/TDD radio systems for deployment in the 1.8 GHz market for both licensed and unlicensed applications. Further, NT is planning the availability of IS.95 CDMA systems in the 1995/96 timeframe and is actively planning the evolution of new RF access systems to support the 1.8 GHz market in 1997. NT is engineering the Next Generation RF Access network to take advantage of the advances of technology and product not only for RF but also in antenna systems, access technologies such as ATM, and distributed intelligence while retaining the utility and investment value of the network infrastructure.

NT's present view is that TDMA technology is mature and cost effective for immediate deployment, but that CDMA technology will not be commercially viable until 1996 or later.

If asked to develop infrastructure that supports both existing cellular and your candidate technology at 1.8 GHz, how would you comply with this request? (i.e., upgrade, overly, replacement, etc.)

NT is delivering both TDMA and FDMA systems into the 1.8 GHz market in 1994. Neither of these systems will be based upon the cellular IS41 network infrastructure. NT believe that the first step of integration is to deliver the same services over different network technologies with consistent end user perspective of service delivery. The network technologies are specialized for cost effectiveness and time to market. (See next page for network schematic.)



In your vision of the future, do dual mode (800 and 1.8) subscriber units play a significant part? If so, explain.

NT believes that the industry lacks key technologies to produce cost effective dual mode terminals in the 1995 timeframe. The lack of these key technologies will make it difficult to provide cost-effective dual mode terminals necessary to drive volume PCS services.

NT believes that it is possible to integrate services to the end user through integration of the HLR/SCP functionality, the Service Nodes adjunct to the network, and through simple terminal interaction such as Smart Cards provide.

What are the steps to an orderly and logical development of the new spectrum?

The first step is to derive the applications of usage for the new spectrum based upon business objectives:

- Integrated network - same usage and applications
- Overlay network - different usage and applications

CTIA PCN Forum

Integration of new Spectrum Into the Wireless World

JOHN BATTIN
Senior Vice President and
General Manager
Personal Communications
General Systems Sector

October 29, 1993

EXHIBIT 6

MOTOROLA
General Systems Sector

CTIA PCN Forum

OTHER SYSTEMS

	TYPE	TECHNOLOGY	POTENTIAL AVAILABILITY
DCS-1800*	LARGE CELL	TDMA-FDD	1995
TDMA-IS-54*	LARGE CELL	TDMA-FDD	1995
CDMA-IS-95*	LARGE CELL	CDMA-FDD	1995
DECT	MICROCELL	TDMA-TDD	1994-95
SHARE™	MICROCELL	TDMA-TDD	1994-95
PHP	MICROCELL	TDMA-TDD	1994-95

* Upband of 800 MHz Cellular Technology

CTIA PCN Forum

S7: What new services do you anticipate will evolve for the wireless world? Are either 800 MHz or 1.8 GHz "better suited" for these services?

Most services are frequency transparent. The 2 GHz advantage is clearly fresh start.

I7: When do you anticipate you will produce commercial 1.8 GHz products?

Motorola will have deployable infrastructure in the second half of 1994. Up-banding current cellular systems (like DCS-1800) and microcells (like low-tier PPS-1800 and DECT) will come first, with new high mobiity systems such as 32 KBs - PPS-1800 about 18 months later.

ALCATEL

DCS 1900 for PCS
Proposal summary

- Alcatel proposes DCS 1900
- DCS 1900 is based on the ETSI GSM/DCS 1800 standard
- DCS 1900 is adapted to US frequency bands
- DCS 1900 is adapted to specific US requirements as additional services and different protocols

EXHIBIT 7